

## **REMARKS**

### A. Background

Claims 1-10, 12, 14-16, and 50-54 were pending in the application at the time of the Office Action. Claims 1-10, 12, 14-16, and 50-54 were rejected as being obvious over cited art. By this response applicant has amended claims 1-3, 5, and 6. As such, claims 1-10, 12, 14-16, and 50-54 are presented for the Examiner's consideration in light of the following remarks.

### B. Proposed Amendments

Applicant has herein amended claims 1-3, 5, and 6 to further clarify, more clearly define, and/or broaden the claimed inventions to expedite receiving a notice of allowance. For example, claims 1-3 have been amended to recite that the reflection region reflects light propagated through the propagating region “with high reflectivity,” and “said gain region and said reflection region form a cavity for laser oscillation with an extended stop bandwidth.” Claims 5 and 6 have been amended to recite that “each of said first and second gain regions” comprises a diffraction grating formed by periodic perturbation with at least one of real and imaginary parts of a complex refractive index and the coupling coefficient of the diffraction grating of said gain region is greater than  $300\text{ cm}^{-1}$ , “so that said first and second gain regions form a cavity for laser oscillation with an extended stop bandwidth.” The amendments to the claims are supported throughout the application. In view of the foregoing discussion, applicant submits that the amendments to the claims do not introduce new matter and entry thereof is respectfully requested.

C. Rejections based on 35 U.S.C. § 103

Pages 3-12 of the Office Action rejects claims 1-7, 9, 10, 14-16 and 50-54 under 35 USC § 103(a) as being unpatentable over U.S. Patent No. 6,501,776 to Numai (“*Numai*”) in view of U.S. Patent No. 6,580,740 to Funabashi (“*Funabashi*”) and further in view of U.S. Patent No. 5,155,737 to Ikeda et al (“*Ikeda*”). Of the rejected claims, claims 1-3, 5, and 6 are independent claims. Applicant respectfully traverses this rejection.

The Examiner states in the Office Action that *Numai* and *Funabashi* teach the structural limitations of the claimed device and *Ikeda* teaches a device with a grating having a coupling coefficient of at least  $300\text{ cm}^{-1}$  in order to achieve wide band characteristics.

However, none of the cited references, alone or in combination, appears to disclose, teach or suggest a cavity with high reflectivity at both ends; that is, none of the cited references disclose a gain region with a high coupling coefficient and a reflection region “with high reflectivity,” (claims 1-3); or two gain regions that each have a high coupling coefficient (claims 5 and 6). In contrast, *Ikeda* appears to disclose a first grating having a high coupling coefficient and a second grating having a low coupling coefficient.

Further, none of the references, taken alone or in combination, appears to disclose, teach or suggest a gain region and a reflection region (claims 1-3) or first and second gain regions (claims 5 and 6) that “form a cavity for laser oscillation with an extended stop bandwidth.” Also, as noted in the prior response, Applicant submits that *Ikeda* does not disclose, teach or suggest the use of a grating having a high coupling coefficient in the gain region.

In view of the foregoing, Applicant submits that it would not be obvious to arrive at the presently claimed inventions by combining the cited references as asserted in the Office Action.

Accordingly, Applicant respectfully requests that the obviousness rejection of claims 1-3, 5, and 6, as well as corresponding dependent claims 4, 7, 9, 10, 14-16, and 50-54, be withdrawn.

Pages 12-14 of the Office Action reject claims 8 and 12 under 35 USC § 103(a) as being unpatentable over the *Numai/Funabashi/Ikeda* combination, discussed above, further in view of U.S. Patent No. 4,583,227 to Kirkby (“*Kirkby*”) (claim 8) or U.S. Patent No. 5,719,974 to Kashyap (“*Kashyap*”) (claim 12). *Kirkby* is merely cited for allegedly teaching “an absolute value of a product of a length of said propagating region and a difference between a temperature differential coefficient of the effective refractive index of said gain region and a temperature differential coefficient of the effective refractive index of said propagating region is equal to or greater than  $7.5 \times 10^{-4}$   $\mu\text{m/K}$ .” *Kashyap* is merely cited for allegedly teaching “the length of said propagating region is determined such that a longitudinal mode spacing determined by a sum of an effective length of the diffraction grating of said gain region and a length of said propagating region, is greater than a stop bandwidth of said diffraction grating.” Applicant respectfully traverses this rejection.

Claims 8 and 12 depend from claim 1 and thus incorporate the limitations thereof. As such, Applicant submits that claims 8 and 12 are distinguished over the cited art for at least the same reasons as discussed above with regard to claim 1. Accordingly, Applicant respectfully requests that the obviousness rejection with regard to claim 8 and 12 be withdrawn.

No other objections or rejections are set forth in the Office Action.

#### D. Conclusion

Applicant notes that this response does not discuss every reason why the claims of the present application are distinguished over the cited art. Most notably, applicant submits that many if not all of the dependent claims are independently distinguishable over the cited art. Applicant has merely

submitted those arguments which it considers sufficient to clearly distinguish the claims over the cited art.

In view of the foregoing, applicant respectfully requests the Examiner's reconsideration and allowance of claims 1-10, 12, 14-16 and 50-54 as amended and presented herein.

In the event there remains any impediment to allowance of the claims which could be clarified in a telephonic interview, the Examiner is respectfully requested to initiate such an interview with the undersigned.

Dated this 31st day of July 2008.

Respectfully submitted,

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